

# THEME 7 COASTAL VULNERABILITY

Coastal vulnerability is defined as “both the potential damage to the coastline as a result of natural hazards and the existing state of the coastline before it encounters an event” (Murali, et. al. 2013). The Western Cape coastline has both natural and man-made assets which require effective management in order to preserve their integrity. These natural and man-made assets are vulnerable to dynamic coastal processes that will be compounded by climate change impacts. Inappropriate planning and unregulated development in high risk coastal areas can compromise coastal infrastructure and the resilience of coastal ecosystems, reducing the ability of remaining natural areas to withstand these dynamic processes.



**DRIVERS**

Increasing populations along the coastline and climate variability and change are the key drivers in terms of coastal vulnerability. Currently most people in the Western Cape live within 25km of the coast and by 2020, 73% of the African population will be living in coastal areas.

**PRESSURES**

There is increasing pressure on coastal land for development and recreational use. Sea level rise together with increasing storm frequencies, intensities and surges pose a threat to development in coastal areas. Infrastructure located in low lying coastal areas are particularly vulnerable to damage and destruction during extreme natural events.

**STATE**

The state of coastal vulnerability can be assessed by looking at changes in weather patterns along the coast and the effect this has had on the coastal environment, as well as identifying areas along the coast where development is located in high risk coastal areas. Currently, there is an increasing trend in the number of buildings located in high risk coastal areas (Figure 1). Records between 2011 and 2014 show that the Western Cape was severely affected by five high impact (flood triggering) weather events that resulted in four provincially gazetted flood disasters. In June 2017, an abnormally large storm was recorded along the coast with wave heights up to 12 meters and wind speeds up to 120km/hour.

**IMPACT**

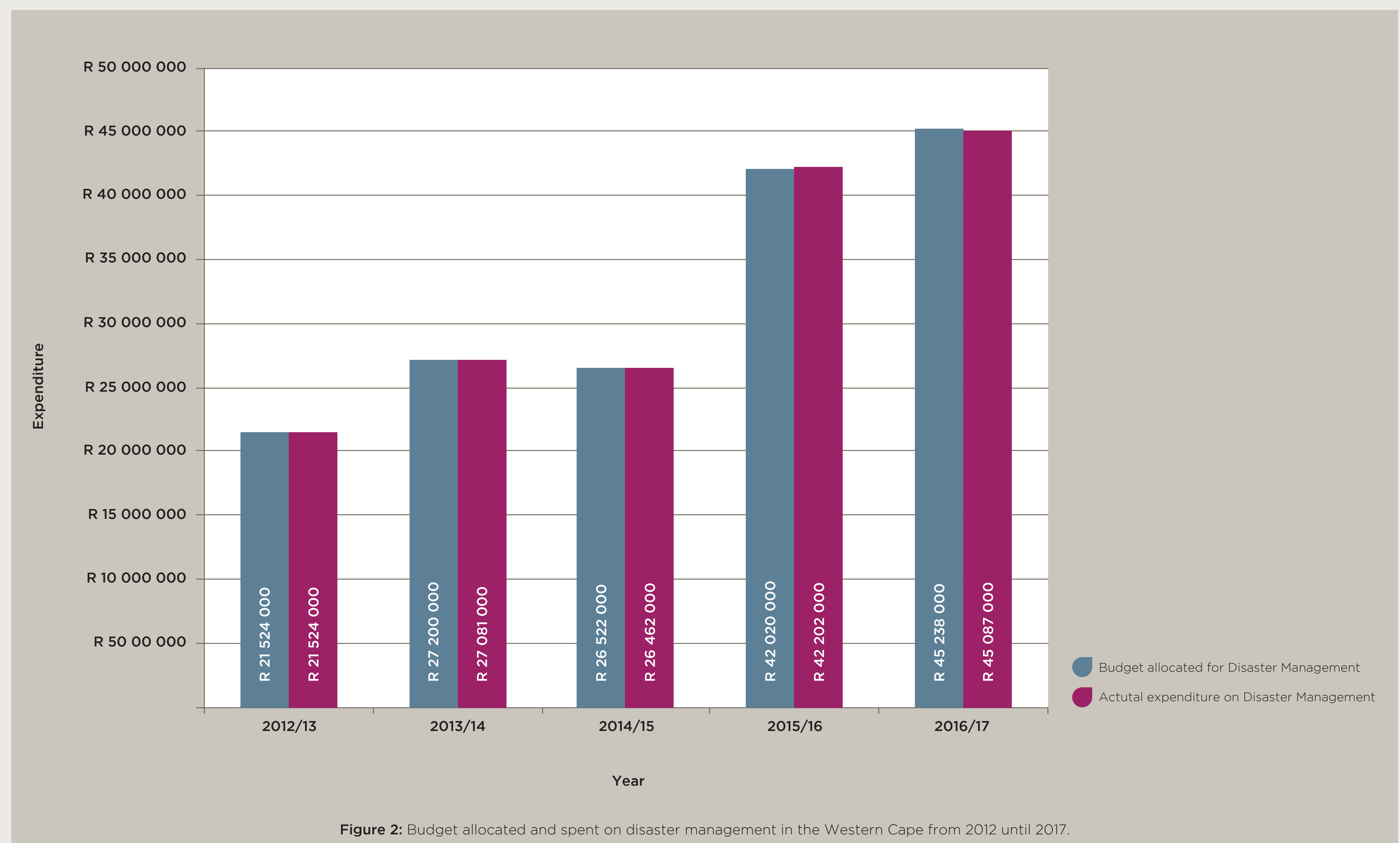
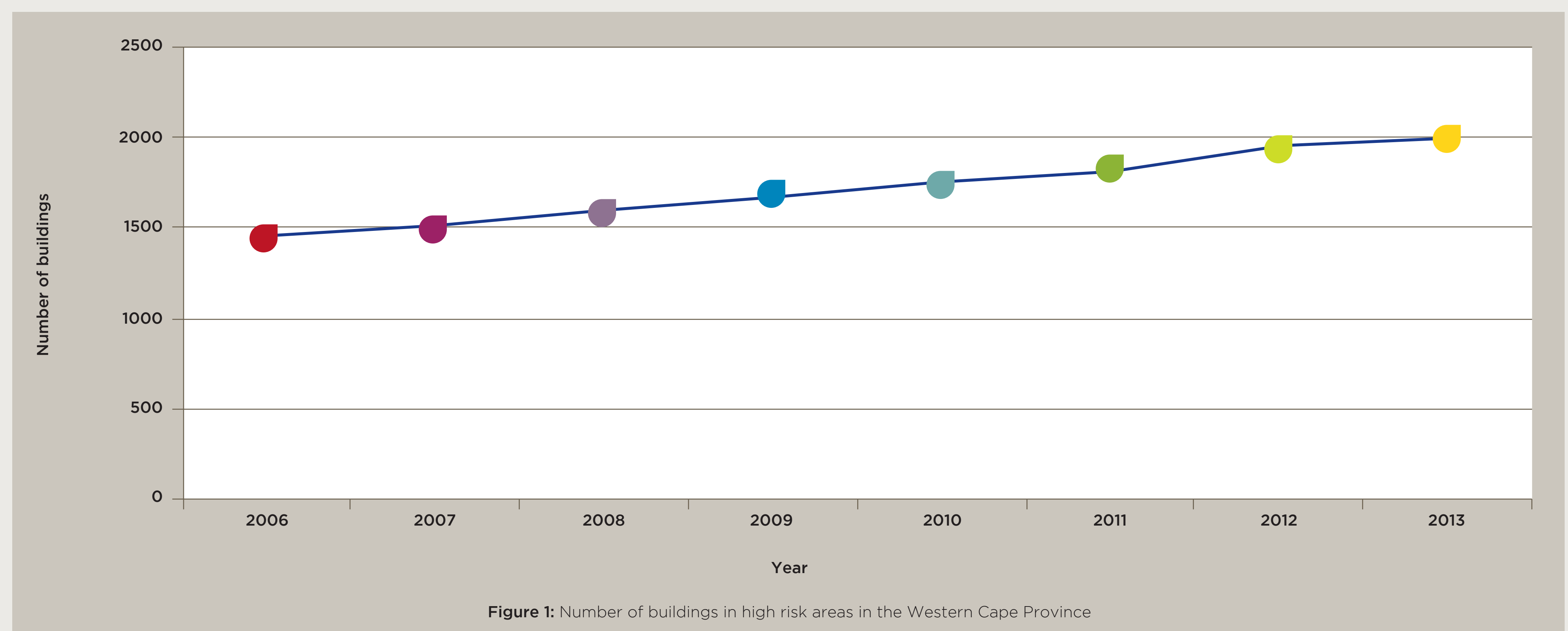
Extreme weather events and other climate change related impacts have significant impact on the social and economic state of affected coastal communities. Between 2011 and 2014, government departments (excluding the Western Cape Department of Agriculture) and affected municipalities reported financial losses in excess R 683 million due to extreme weather events. Climate change related impacts include:

- Sea level rise affecting the physical and chemical characteristics of coastal areas;
- Increase in storm intensities and frequencies resulting in flooding and damage to infrastructure
- Wind and wave changes causing changes in ocean upwellings, sediment dynamics and damage to offshore and coastal infrastructure;
- Increasing sea surface temperatures impacting on the biological functioning of species; and
- Ocean acidification affecting many marine species that rely on their shells for protection (e.g. lobsters and oysters).

**RESPONSES**

Examples of responses that the Authorities are implementing include:

- The delineation of Coastal Management Lines (CML) and Coastal Protection Zones (CPZ), of which all District Municipalities have delineated and are in the process of being adopted by the MEC;
- The publishing of the Western Cape Climate Change Response Strategy Biennial Monitoring and Evaluation Report;
- The implementation of the Western Cape Disaster Management Framework (Figure 2); and
- The inclusion of coastal risks into the Western Cape Disaster Risk Profile (WCDRP).



**OUTLOOK: IMPROVING**

The coast is under increasing pressure from anthropogenic activities, such as development in high risk coastal areas, as well as climate variability and change. These developments not only impact on the resilience of the coast to natural hazards but are at risk of damage and destruction as a result of sea level rise and storm surges.

Climate change threatens the sustainability and viability of resource use in the marine and coastal environments, particularly the commercial, subsistence and recreational fishery sectors.

The Western Cape Government is proactive in trying to address these issues and increase the province's resilience to project climate change impacts through the implementation of a number of policies and plans that aim to reduce the vulnerability of communities along the coastline.

